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EXAMINER	
NOORISTANY, SULAIMAN	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,667	MATSUMOTO ET AL.	
	Examiner	Art Unit	
	SULAIMAN NOORISTANY	2446	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _19 August 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-32_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-32_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _14 June 2005_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _6/14/2005_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Detailed Action

This Office Action is response to the application (10/539667) filed on 08/19/2008.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-32 are rejected under 112, second paragraph as being indefinite for failing to particularly point and distinctly claim the subject matter which applicant regards as the invention

In claim 1, "*to decide whether a respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information*" in line 7 is indefinite and not clear what this is in reference to. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. However the claims will be given a broad reasonable interpretation for the purposes of examination as best understood.

Claims 2-32 are rejected for similar reasons as stated for claim 1.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

<u>Claims 1-13, 15-28 and 31</u> are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shigehashi** JP Patent App. Publication No. **JP-2003/046539** in view of **Kuo** U.S Patent No. **US 7,209,435.**

Regarding claim 1, Shigehashi teaches wherein an inter-router adjustment method, the method comprising:

requesting router status information of router devices belonging to a common sub-network, **(LAN – [0003])** of a respective router device **(VRRP, hello packet is exchanged at a certain interval between the routers to check whether each router is in the normal state – [0005]; Fig. 6 – router 71 & 72)**;

acquiring the router status information **(health check – [0005])** and calculating priorities **(equation 1-2 "calculating priorities" – [0039])** to decide whether a respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information so that the router devices belonging to the common sub-network operate as one virtual router device **(Each router compares said priority with its own priority to determine which router is the active router (master router) that should process the packets – [0005]; Fig. 6, router 71 & 72 – For example, for VRID(1), if PRI(1-1) > PRI(2-1), router 71 will function as the master router related to virtual router ID = VRID(1) .. – [0026-0029])**,

deciding a first router device belonging to the common sub-network that is operational and one or more other router devices of the router devices belonging to the common sub-network to be placed in a standby status, according to the calculated priorities **(the router with the highest priority is automatically set as the active "here same as operational" router, while other routers are used as standby routers (backup routers) – [0005]).**

With respect to claim 1 Shigehashi does not explicitly teach "*the router devices connected to external networks, respectively, the external networks being different from each other*"; and "*notifying the plurality of router devices belonging to the common sub-network that the first router device is operational*"

<u>Kuo</u> teaches that its well known to have the router devices connected to external networks, respectively, the external networks being different from each other **(Fig. 1, unit 114 – WAN – col. 5, lines 54-55);**

notifying the plurality of router devices belonging to the common sub-network that the first router device is operational **(Fig. 11 -- Each VSRP switch in master mode 1104 and 1106 broadcasts "here is same as *notifying*" hello packets 1122 and 1124 for each virtual switch in which the VSRP switch is a VSRP master – col. 16, lines 37-40; Fig. 8 -- Where the VSRP switch in master confirm mode transmits the number of hello packets as defined by the hello counter variable, step 812, and no other device is broadcasting a higher priority value, step 820, the VSRP switch concludes it should be the VSRP master and transitions to master mode – col. 13, lines 25-31)**.

Kuo further teaches wherein acquiring the router status information **(the switches communicating their status through use of a plurality of redundancy control packets -- abstract)** and calculating priorities **(Fig. 10 – calculating priorities)** to decide whether the respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information, so that the router devices belonging to the common sub-network operate as one virtual router device; and **(A hello packet is used by each VSRP backup switch to determine, based on the status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets – Col. 9, lines 39-45); Fig. 3).**

Kuo further teaches wherein deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities **(Fig. 1, unit 102 – virtual switch X "master & backup")**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuo's invention by using a method for router redundancy in a local area network and or in a wide area network that allows both a primary and a backup router "act as a virtual router" each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis. "FIG. 10 presents an embodiment of a process executed by the VSRP switch to modify its

priority value vis-a-vis available outbound bandwidth." Each VSRP switch is configured with a low bandwidth threshold value, which is retrieved from storage or memory, step 1002. This low bandwidth threshold may be set by a switch administrator using the CLI to set the parameter in the VSRP switch's software. Looking at the switches from any given virtual switch as a group, a check is performed to determine if additional VSRP switches need to execute the priority update, step 1004. It should be noted that software at each VSRP switch performs this analysis in parallel without input from other VSRP switches in the virtual switch or any other controlling device. The loop presented here, therefore, is for the purpose of clarity in the presentation only. In addition, software executed by the VSRP switch, e.g., priority calculation software, takes a measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments. Furthermore, a multitude of available techniques are well known to those skilled in the art for measuring the bandwidth available on a given link. The measured bandwidth available to the VSRP switch is compared against the low bandwidth threshold set at the CLI. Other techniques may be used to determine dynamically whether the update or decrease a switch's priority, such as a periodic "ping" to a known router outside the network (external network) to ensure a connection to the outside network, wherein the priority is decreased if the "ping" fails to go through, as taught by Kuo.

Regarding claim 2, Shigehashi teaches wherein an inter-router adjustment method, the method comprising:

requesting router status information of router devices belonging to a common sub-network, **(LAN – [0003])** of a respective router device **(VRRP, hello packet is exchanged at a certain interval between the routers to check whether each router is in the normal state – [0005]; Fig. 6 – router 71 & 72)**;

acquiring the router status information **(health check – [0005])** and calculating priorities **(equation 1-2 "calculating priorities" – [0039])** to decide whether a respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information *so that the router devices belonging to the common sub-network operate as one virtual router device* **(Each router compares said priority with its own priority to determine which router is the active router (master router) that should process the packets – [0005]; Fig. 6, router 71 & 72 – For example, for VRID(1), if PRI(1-1) > PRI(2-1), router 71 will function as the master router related to virtual router ID = VRID(1) .. – [0026-0029])**,

deciding a first router device belonging to the common sub-network that is operational and one or more other router devices of the router devices belonging to the common sub-network to be placed in a standby status, according to the calculated priorities **(the router with the highest priority is automatically set as the active "here same as operational" router, while other routers are used as standby routers (backup routers) – [0005]).**

With respect to claim 2 Shigehashi does not explicitly teach "*the router devices connected to external networks, respectively, the external networks being different from*

each other"; and "notifying the plurality of router devices belonging to the common sub-network that the first router device is operational"

Kuo teaches that its well known to have the router devices connected to external networks, respectively, the external networks being different from each other **(Fig. 1, unit 114 – WAN – col. 5, lines 54-55);**

notifying the plurality of router devices belonging to the common sub-network that the first router device is operational **(Fig. 11 -- Each VSRP switch in master mode 1104 and 1106 broadcasts "here is same as *notifying*" hello packets 1122 and 1124 for each virtual switch in which the VSRP switch is a VSRP master – col. 16, lines 37-40; Fig. 8 -- Where the VSRP switch in master confirm mode transmits the number of hello packets as defined by the hello counter variable, step 812, and no other device is broadcasting a higher priority value, step 820, the VSRP switch concludes it should be the VSRP master and transitions to master mode – col. 13, lines 25-31)**.

Kuo further teaches wherein acquiring the router status information **(the switches communicating their status through use of a plurality of redundancy control packets -- abstract)** and calculating priorities **(Fig. 10 – calculating priorities)** to decide whether the respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information, so that the router devices belonging to the common sub-network operate as one virtual router device; and **(A hello packet is used by each VSRP backup switch to determine, based on the**

status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets – Col. 9, lines 39-45); Fig. 3).

Kuo further teaches wherein deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities **(Fig. 1, unit 102 – virtual switch X "master & backup")**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuo's invention by using a method for router redundancy in a local area network and or in a wide area network that allows both a primary and a backup router "act as a virtual router" each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis. "FIG. 10 presents an embodiment of a process executed by the VSRP switch to modify its priority value vis-a-vis available outbound bandwidth." Each VSRP switch is configured with a low bandwidth threshold value, which is retrieved from storage or memory, step 1002. This low bandwidth threshold may be set by a switch administrator using the CLI to set the parameter in the VSRP switch's software. Looking at the switches from any given virtual switch as a group, a check is performed to determine if additional VSRP switches need to execute the priority update, step 1004. It should be noted that software at each VSRP switch performs this analysis in parallel without input from other VSRP switches in the virtual switch or any other controlling device. The loop presented here,

therefore, is for the purpose of clarity in the presentation only. In addition, software executed by the VSRP switch, e.g., priority calculation software, takes a measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments. Furthermore, a multitude of available techniques are well known to those skilled in the art for measuring the bandwidth available on a given link. The measured bandwidth available to the VSRP switch is compared against the low bandwidth threshold set at the CLI. Other techniques may be used to determine dynamically whether the update or decrease a switch's priority, such as a periodic “ping” to a known router outside the network (external network) to ensure a connection to the outside network, wherein the priority is decreased if the "ping" fails to go through, as taught by Kuo.

Regarding claim 3, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 1 above. Shigehashi further teaches wherein a step of adjusting the priorities between or among **(plurality)** the router devices depending upon a significance of the router status information **(the relation of PRI (1-1) >PRI (2-1) again as a result of the rise of CPU activity ratio of a routers – [0054])**.

Regarding claim 4, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 1 above. Shigehashi further teaches wherein a request for the router status information is periodically made based on the information request step **(health check – [0005])**.

Regarding claim 5, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 1 above. Shigehashi further teaches wherein a request for the router status information is made according to a request from a communication device including the router devices connected to the common sub-network **(Fig. 6 – network configuration diagram indicating routers and host for explaining the function of the conventional VRRP – pages 30 & 36)**.

Regarding claim 6, Shigehashi and Kuo together taught an inter-router adjustment method as in claim1 above. Shigehashi further teaches wherein the calculating the priorities **(equation 1-2 – [0039])** is made when there is a change in the router status information acquired **(Fig. 6, router 71 & 72 – page 36)**.

Regarding claim 7, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 1 above. Shigehashi further teaches wherein the router status information further includes at least one of a processing burden or a remaining battery capacity of the respective router device **(processing burden – [0055])**.

Regarding claim 8, Shigehashi teaches wherein an inter-router adjustment method, the method comprising:

requesting router status information of router devices belonging to a common sub-network, **(LAN – [0003])** of a respective router device **(VRRP, hello packet is**

exchanged at a certain interval between the routers to check whether each router is in the normal state – [0005]; Fig. 6 – router 71 & 72);

acquiring the router status information **(health check – [0005])** and calculating priorities **(equation 1-2 "calculating priorities" – [0039])** to decide whether a respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information *so that the router devices belonging to the common sub-network operate as one virtual router device* **(Each router compares said priority with its own priority to determine which router is the active router (master router) that should process the packets – [0005]; Fig. 6, router 71 & 72 – For example, for VRID(1), if PRI(1-1) > PRI(2-1), router 71 will function as the master router related to virtual router ID = VRID(1) .. – [0026-0029])**,

deciding a first router device belonging to the common sub-network that is operational and one or more other router devices of the router devices belonging to the common sub-network to be placed in a standby status, according to the calculated priorities **(the router with the highest priority is automatically set as the active "here same as operational" router, while other routers are used as standby routers (backup routers) – [0005]).**

With respect to claim 8 Shigehashi does not explicitly teach "*the router devices connected to external networks, respectively, the external networks being different from each other*"; and "*notifying the plurality of router devices belonging to the common sub-network that the first router device is operational*"

Kuo teaches that its well known to have the router devices connected to external networks, respectively, the external networks being different from each other **(Fig. 1, unit 114 – WAN – col. 5, lines 54-55);**

notifying the plurality of router devices belonging to the common sub-network that the first router device is operational **(Fig. 11 -- Each VSRP switch in master mode 1104 and 1106 broadcasts "here is same as *notifying*" hello packets 1122 and 1124 for each virtual switch in which the VSRP switch is a VSRP master – col. 16, lines 37-40; Fig. 8 -- Where the VSRP switch in master confirm mode transmits the number of hello packets as defined by the hello counter variable, step 812, and no other device is broadcasting a higher priority value, step 820, the VSRP switch concludes it should be the VSRP master and transitions to master mode – col. 13, lines 25-31)**.

Kuo further teaches wherein acquiring the router status information **(the switches communicating their status through use of a plurality of redundancy control packets -- abstract)** and calculating priorities **(Fig. 10 – calculating priorities)** to decide whether the respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information, so that the router devices belonging to the common sub-network operate as one virtual router device; and **(A hello packet is used by each VSRP backup switch to determine, based on the status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an**

intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets – Col. 9, lines 39-45); Fig. 3).

Kuo further teaches wherein deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities **(Fig. 1, unit 102 – virtual switch X "master & backup")**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuo's invention by using a method for router redundancy in a local area network and or in a wide area network that allows both a primary and a backup router "act as a virtual router" each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis. "FIG. 10 presents an embodiment of a process executed by the VSRP switch to modify its priority value vis-a-vis available outbound bandwidth." Each VSRP switch is configured with a low bandwidth threshold value, which is retrieved from storage or memory, step 1002. This low bandwidth threshold may be set by a switch administrator using the CLI to set the parameter in the VSRP switch's software. Looking at the switches from any given virtual switch as a group, a check is performed to determine if additional VSRP switches need to execute the priority update, step 1004. It should be noted that software at each VSRP switch performs this analysis in parallel without input from other VSRP switches in the virtual switch or any other controlling device. The loop presented here, therefore, is for the purpose of clarity in the presentation only. In addition, software executed by the VSRP switch, e.g., priority calculation software, takes a measurement

of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments. Furthermore, a multitude of available techniques are well known to those skilled in the art for measuring the bandwidth available on a given link. The measured bandwidth available to the VSRP switch is compared against the low bandwidth threshold set at the CLI. Other techniques may be used to determine dynamically whether the update or decrease a switch's priority, such as a periodic “ping” to a known router outside the network (external network) to ensure a connection to the outside network, wherein the priority is decreased if the "ping" fails to go through, as taught by Kuo.

Regarding claim 9, Shigehashi teaches wherein an inter-router adjustment method, the method comprising:

requesting router status information of router devices belonging to a common sub-network, **(LAN – [0003])** of a respective router device **(VRRP, hello packet is exchanged at a certain interval between the routers to check whether each router is in the normal state – [0005]; Fig. 6 – router 71 & 72)**;

acquiring the router status information **(health check – [0005])** and calculating priorities **(equation 1-2 “calculating priorities” – [0039])** to decide whether a respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information *so that the router devices belonging to the common sub-network operate as one virtual router device* **(Each router compares**

said priority with its own priority to determine which router is the active router (master router) that should process the packets – [0005]; Fig. 6, router 71 & 72 – For example, for VRID(1), if PRI(1-1) > PRI(2-1), router 71 will function as the master router related to virtual router ID = VRID(1) .. – [0026-0029]),

deciding a first router device belonging to the common sub-network that is operational and one or more other router devices of the router devices belonging to the common sub-network to be placed in a standby status, according to the calculated priorities **(the router with the highest priority is automatically set as the active "here same as operational" router, while other routers are used as standby routers (backup routers) – [0005]).**

With respect to claim 9 Shigehashi does not explicitly teach "*the router devices connected to external networks, respectively, the external networks being different from each other*"; and "*notifying the plurality of router devices belonging to the common sub-network that the first router device is operational*"

Kuo teaches that its well known to have the router devices connected to external networks, respectively, the external networks being different from each other **(Fig. 1, unit 114 – WAN – col. 5, lines 54-55);**

notifying the plurality of router devices belonging to the common sub-network that the first router device is operational **(Fig. 11 -- Each VSRP switch in master mode 1104 and 1106 broadcasts "here is same as *notifying*" hello packets 1122 and 1124 for each virtual switch in which the VSRP switch is a VSRP master – col. 16, lines 37-40; Fig. 8 -- Where the VSRP switch in master confirm mode transmits the**

number of hello packets as defined by the hello counter variable, step 812, and no other device is broadcasting a higher priority value, step 820, the VSRP switch concludes it should be the VSRP master and transitions to master mode – col. 13, lines 25-31).

Kuo further teaches wherein acquiring the router status information **(the switches communicating their status through use of a plurality of redundancy control packets -- abstract)** and calculating priorities **(Fig. 10 – calculating priorities)** to decide whether the respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information, so that the router devices belonging to the common sub-network operate as one virtual router device; and **(A hello packet is used by each VSRP backup switch to determine, based on the status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets – Col. 9, lines 39-45); Fig. 3).**

Kuo further teaches wherein deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities **(Fig. 1, unit 102 – virtual switch X "master & backup")**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuo's invention by using a method for router redundancy

in a local area network and or in a wide area network that allows both a primary and a backup router "act as a virtual router" each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis. "FIG. 10 presents an embodiment of a process executed by the VSRP switch to modify its priority value vis-a-vis available outbound bandwidth." Each VSRP switch is configured with a low bandwidth threshold value, which is retrieved from storage or memory, step 1002. This low bandwidth threshold may be set by a switch administrator using the CLI to set the parameter in the VSRP switch's software. Looking at the switches from any given virtual switch as a group, a check is performed to determine if additional VSRP switches need to execute the priority update, step 1004. It should be noted that software at each VSRP switch performs this analysis in parallel without input from other VSRP switches in the virtual switch or any other controlling device. The loop presented here, therefore, is for the purpose of clarity in the presentation only. In addition, software executed by the VSRP switch, e.g., priority calculation software, takes a measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments. Furthermore, a multitude of available techniques are well known to those skilled in the art for measuring the bandwidth available on a given link. The measured bandwidth available to the VSRP switch is compared against the low bandwidth threshold set at the CLI. Other techniques may be used to determine dynamically whether the update or decrease a switch's priority, such as a periodic "ping" to a known router outside the network (external network) to ensure a connection to the

outside network, wherein the priority is decreased if the "ping" fails to go through, as taught by Kuo.

Regarding claim 10, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 8 above. Shigehashi further teaches wherein the router information gathering section has a comparing section for comparing the router status information newly acquired with existing router status information **(the router with the highest priority is automatically set as the active router, while other routers are used as standby routers (backup routers) – [0005])**, to instruct the priority calculating section to re-calculate a priority when the comparing section detects a difference in the router status information **(If the master router is unable to carry out communication due to trouble or other reason, other backup routers will detect that the master router does not respond to the hello packet. Among the backup routers, the one with the highest priority is set to the next master router having the same IP address as said master router – [0006])**.

Regarding claim 11, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 8 above. Shigehashi further teaches wherein the router information gathering section has an information request section for requesting the router status information to the router device **(Fig. 2, express the flow of the process in which it is started when one certain router receives a halo packet from other routers –**

[0057]).

Regarding claim 12, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 8 above. Shigehashi further teaches wherein the router information gathering section has a timer **(Fixed time amount which measures a CPU activity ratio can be to some extend as a long time for 2 second, 5 second, etc – [0047])**, the information request section requesting the router status information when receiving a time-up notification from the timer **(The timing which compress a priority between routers has the desirable timing (usually 1-second spacing) which receives a halo packet in VRRP [0045])**.

Regarding claims 13, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 8 above. Kuo further teaches wherein the router information gathering section further includes an update request receiving section for receiving an update request for the priority from a communication device including the router devices connected to the common sub-network, the update request receiving section, when receiving the update request, making a notification to the information request section whereby the information request section requests the router status information to the router device **(each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis – Col. 14, lines 38-40)**.

Regarding claim 15, it lists all the same elements of **claim 1**, but in network configuration system rather than method form. Therefore, the supporting rationale of the rejection to **claim 1** applies equally as well to **claim 15**.

Regarding claim 16, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 15 above. Shigehashi further teaches wherein the status notifying section forwards periodically the router status information onto the common sub-network **(health check – [0005])**.

Regarding claim 17, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 15 above. Kuo further teaches wherein an information request receiving section for receiving a request for the router status information, to forward the router status information onto the common sub-network depending upon the request the status notifying section received **(Fig. 15 -- is a flow diagram presenting a method for configuring and operating a virtual switch connected to a ring topology network according to one embodiment of the present invention – col. 5, lines 8-12).**

Regarding claims 18, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 15 above. Kuo further teaches wherein a status monitor section for monitoring a change in the router status information, the status monitor section, when detecting a change in the router status information, making a notification to the

information notifying section whereby the information notifying section forwards a latest router status information onto the common sub-network **(Fig. 5 -- the VSRP switches 504 and 506 are symmetrically connected to the supported VSRP aware switches 508, 510, and 512. The VSRP switches 504 and 506 may also export this priority data for utilization with other software applications that monitor and respond to network health issues).**

Regarding claim 19, Shigehashi teaches wherein an inter-router adjustment method, the method comprising:

requesting router status information of router devices belonging to a common sub-network, **(LAN – [0003])** of a respective router device **(VRRP, hello packet is exchanged at a certain interval between the routers to check whether each router is in the normal state – [0005]; Fig. 6 – router 71 & 72)**;

acquiring the router status information **(health check – [0005])** and calculating priorities **(equation 1-2 “calculating priorities” – [0039])** to decide whether a respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information *so that the router devices belonging to the common sub-network operate as one virtual router device* **(Each router compares said priority with its own priority to determine which router is the active router (master router) that should process the packets – [0005]; Fig. 6, router 71 & 72 –**

For example, for VRID(1), if PRI(1-1) > PRI(2-1), router 71 will function as the master router related to virtual router ID = VRID(1) .. – [0026-0029]),

deciding a first router device belonging to the common sub-network that is operational and one or more other router devices of the router devices belonging to the common sub-network to be placed in a standby status, according to the calculated priorities **(the router with the highest priority is automatically set as the active "here same as operational" router, while other routers are used as standby routers (backup routers) – [0005]).**

With respect to claim 19 Shigehashi does not explicitly teach "*the router devices connected to external networks, respectively, the external networks being different from each other*"; and "*notifying the plurality of router devices belonging to the common sub-network that the first router device is operational*"

Kuo teaches that its well known to have the router devices connected to external networks, respectively, the external networks being different from each other **(Fig. 1, unit 114 – WAN – col. 5, lines 54-55);**

notifying the plurality of router devices belonging to the common sub-network that the first router device is operational **(Fig. 11 -- Each VSRP switch in master mode 1104 and 1106 broadcasts "here is same as *notifying*" hello packets 1122 and 1124 for each virtual switch in which the VSRP switch is a VSRP master – col. 16, lines 37-40; Fig. 8 -- Where the VSRP switch in master confirm mode transmits the number of hello packets as defined by the hello counter variable, step 812, and no other device is broadcasting a higher priority value, step 820, the VSRP switch**

concludes it should be the VSRP master and transitions to master mode – col. 13, lines 25-31).

Kuo further teaches wherein acquiring the router status information **(the switches communicating their status through use of a plurality of redundancy control packets -- abstract)** and calculating priorities **(Fig. 10 – calculating priorities)** to decide whether the respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information, so that the router devices belonging to the common sub-network operate as one virtual router device; and **(A hello packet is used by each VSRP backup switch to determine, based on the status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets – Col. 9, lines 39-45); Fig. 3).**

Kuo further teaches wherein deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities **(Fig. 1, unit 102 – virtual switch X "master & backup")**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuo's invention by using a method for router redundancy in a local area network and or in a wide area network that allows both a primary and a backup router "act as a virtual router" each VSRP device updates its priority value with

regard to the quality of its outbound connection on an arbitrary or periodic basis. “FIG. 10 presents an embodiment of a process executed by the VSRP switch to modify its priority value vis-a-vis available outbound bandwidth.” Each VSRP switch is configured with a low bandwidth threshold value, which is retrieved from storage or memory, step 1002. This low bandwidth threshold may be set by a switch administrator using the CLI to set the parameter in the VSRP switch's software. Looking at the switches from any given virtual switch as a group, a check is performed to determine if additional VSRP switches need to execute the priority update, step 1004. It should be noted that software at each VSRP switch performs this analysis in parallel without input from other VSRP switches in the virtual switch or any other controlling device. The loop presented here, therefore, is for the purpose of clarity in the presentation only. In addition, software executed by the VSRP switch, e.g., priority calculation software, takes a measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments. Furthermore, a multitude of available techniques are well known to those skilled in the art for measuring the bandwidth available on a given link. The measured bandwidth available to the VSRP switch is compared against the low bandwidth threshold set at the CLI. Other techniques may be used to determine dynamically whether the update or decrease a switch's priority, such as a periodic “ping” to a known router outside the network (external network) to ensure a connection to the outside network, wherein the priority is decreased if the "ping" fails to go through, as taught by Kuo.

Regarding claim 20, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 2 above. Shigehashi further teaches wherein a step of adjusting the priorities between or among **(plurality)** the router devices depending upon a significance of the router status information **(the relation of PRI (1-1) >PRI (2-1) again as a result of the rise of CPU activity ratio of a routers – [0054])**.

Regarding claim 21, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 2 above. Shigehashi further teaches wherein a request for the router status information is periodically made based on the information request step **(health check – [0005])**.

Regarding claim 22, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 2 above. Shigehashi further teaches wherein a request for the router status information is made according to a request from a communication device including the router devices connected to the common sub-network **(Fig. 6 – network configuration diagram indicating routers and host for explaining the function of the conventional VRRP – pages 30 & 36)**.

Regarding claim 23, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 2 above. Shigehashi further teaches wherein the calculating the priorities **(equation 1-2 – [0039])** is made when there is a change in the router status information acquired **(Fig. 6, router 71 & 72 – page 36)**.

Regarding claim 24, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 2 above. Shigehashi further teaches wherein the router status information further includes at least one of a processing burden or a remaining battery capacity of the respective router device **(processing burden – [0055])**.

Regarding claim 25, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 9 above. Shigehashi further teaches wherein the router information gathering section has a comparing section for comparing the router status information newly acquired with existing router status information **(the router with the highest priority is automatically set as the active router, while other routers are used as standby routers (backup routers) – [0005])**, to instruct the priority calculating section to re-calculate a priority when the comparing section detects a difference in the router status information **(If the master router is unable to carry out communication due to trouble or other reason, other backup routers will detect that the master router does not respond to the hello packet. Among the backup routers, the one with the highest priority is set to the next master router having the same IP address as said master router – [0006])**.

Regarding claim 26, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 9 above. Shigehashi further teaches wherein the router information gathering section has an information request section for requesting the router status

information to the router device **(Fig. 2, express the flow of the process in which it is started when one certain router receives a halo packet from other routers – [0057])**.

Regarding claim 27, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 9 above. Shigehashi further teaches wherein the router information gathering section has a timer **(Fixed time amount which measures a CPU activity ratio can be to some extend as a long time for 2 second, 5 second, etc – [0047])**, the information request section requesting the router status information when receiving a time-up notification from the timer **(The timing which compress a priority between routers has the desirable timing (usually 1-second spacing) which receives a halo packet in VRRP [0045])**.

Regarding claim 28, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 9 above. Kuo further teaches wherein the router information gathering section further includes an update request receiving section for receiving an update request for the priority from a communication device including the router devices connected to the common sub-network, the update request receiving section, when receiving the update request, making a notification to the information request section whereby the information request section requests the router status information to the router device **(each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis – Col. 14,**

lines 38-40).

Regarding claim 31, Shigehashi and Kuo together taught an inter-router adjustment method as in claim 9 above. Kuo further teaches wherein the line status information indicates at least one of: (i) a transmission speed of the physical link **(health issues/bandwidth)**, (ii) an error condition for the physical link **(failure or reduction)**, or (iii) a degree of congestion on the physical link, the physical link being different from any router device **(Fig. 10 --measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments – col. 4, lines 55-60).**

Regarding claim 32, Shigehashi teaches wherein an inter-router adjustment method, the method comprising:

requesting router status information of router devices belonging to a common sub-network, **(LAN – [0003])** of a respective router device **(VRRP, hello packet is exchanged at a certain interval between the routers to check whether each router is in the normal state – [0005]; Fig. 6 – router 71 & 72)**;

acquiring the router status information **(health check – [0005])** and calculating priorities **(equation 1-2 "calculating priorities" – [0039])** to decide whether a respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information *so that the router devices belonging to*

the common sub-network operate as one virtual router device **(Each router compares said priority with its own priority to determine which router is the active router (master router) that should process the packets – [0005]; Fig. 6, router 71 & 72 – For example, for VRID(1), if PRI(1-1) > PRI(2-1), router 71 will function as the master router related to virtual router ID = VRID(1) .. – [0026-0029])**,

deciding a first router device belonging to the common sub-network that is operational and one or more other router devices of the router devices belonging to the common sub-network to be placed in a standby status, according to the calculated priorities **(the router with the highest priority is automatically set as the active "here same as operational" router, while other routers are used as standby routers (backup routers) – [0005]).**

With respect to claim 32 Shigehashi does not explicitly teach "*the router devices connected to external networks, respectively, the external networks being different from each other*"; and "*notifying the plurality of router devices belonging to the common sub-network that the first router device is operational*"

Kuo teaches that its well known to have the router devices connected to external networks, respectively, the external networks being different from each other **(Fig. 1, unit 114 – WAN – col. 5, lines 54-55);**

notifying the plurality of router devices belonging to the common sub-network that the first router device is operational **(Fig. 11 -- Each VSRP switch in master mode 1104 and 1106 broadcasts "here is same as *notifying*" hello packets 1122 and 1124 for each virtual switch in which the VSRP switch is a VSRP master – col. 16,**

lines 37-40; Fig. 8 -- Where the VSRP switch in master confirm mode transmits the number of hello packets as defined by the hello counter variable, step 812, and no other device is broadcasting a higher priority value, step 820, the VSRP switch concludes it should be the VSRP master and transitions to master mode – col. 13, lines 25-31).

Kuo further teaches wherein acquiring the router status information **(the switches communicating their status through use of a plurality of redundancy control packets -- abstract)** and calculating priorities **(Fig. 10 – calculating priorities)** to decide whether the respective router device is to have an operational status in which the respective router device of the router devices belonging to the common sub-network is placed in operation based on the router status information, so that the router devices belonging to the common sub-network operate as one virtual router device; and **(A hello packet is used by each VSRP backup switch to determine, based on the status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets – Col. 9, lines 39-45); Fig. 3).**

Kuo further teaches wherein deciding a first router device belonging to the common sub-network that is operational and a second router device to be placed in a standby status, according to the calculated priorities **(Fig. 1, unit 102 – virtual switch X “master & backup”)**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuo's invention by using a method for router redundancy in a local area network and or in a wide area network that allows both a primary and a backup router "act as a virtual router" each VSRP device updates its priority value with regard to the quality of its outbound connection on an arbitrary or periodic basis. "FIG. 10 presents an embodiment of a process executed by the VSRP switch to modify its priority value vis-a-vis available outbound bandwidth." Each VSRP switch is configured with a low bandwidth threshold value, which is retrieved from storage or memory, step 1002. This low bandwidth threshold may be set by a switch administrator using the CLI to set the parameter in the VSRP switch's software. Looking at the switches from any given virtual switch as a group, a check is performed to determine if additional VSRP switches need to execute the priority update, step 1004. It should be noted that software at each VSRP switch performs this analysis in parallel without input from other VSRP switches in the virtual switch or any other controlling device. The loop presented here, therefore, is for the purpose of clarity in the presentation only. In addition, software executed by the VSRP switch, e.g., priority calculation software, takes a measurement of the bandwidth available on the interface connecting the VSRP switch to the outside network or network segments. Furthermore, a multitude of available techniques are well known to those skilled in the art for measuring the bandwidth available on a given link. The measured bandwidth available to the VSRP switch is compared against the low bandwidth threshold set at the CLI. Other techniques may be used to determine dynamically whether the update or decrease a switch's priority, such as a periodic "ping"

to a known router outside the network (external network) to ensure a connection to the outside network, wherein the priority is decreased if the "ping" fails to go through, as taught by Kuo.

Claim 14, 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shigehashi** JP Patent App. Publication No. **JP-2003046539** in view of **Kuo** U.S Patent No. **US 7,209,435** and further in view of **Odaohhara** U.S Patent App. No **US 2002/0144160.**

Regarding claim 14, Shigehashi and Kuo together taught the method as in claim 1 above. However, Shigehashi and Blankenship are silent in terms of the *"battery capacity information."*

Odaohhara teaches wherein the line status information further includes battery capacity information that indicates a remaining battery capacity of the respective router device such that the calculated priorities are based on the line status information and the remaining battery capacity of the respective router device **(FIG. 5 shows a flowchart of the processes of a battery capacity information compensating program executed by the CPU – [0038]).**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shigehashi's and Kuo's invention by utilizing a process for battery capacity information in a CPU, which can be used as an electric power unit for a computer (switch/gateway/router) is provided with a memory that stores capacity

information denoting the total capacity of a battery and compensation information representing the total capacity of the battery as a function of a battery charging cycle count. In addition the battery monitor circuit outputs remaining battery capacity information to the signal line and monitors a voltage on a power line to calculate the remaining battery capacity, as taught by Odaohhara.

Regarding claim 29, Odaohhara teaches wherein the line status information further includes battery capacity information that indicates a remaining battery capacity of the respective router device such that the calculated priorities are based on the line status information and the remaining battery capacity of the respective router device **(FIG. 5 shows a flowchart of the processes of a battery capacity information compensating program executed by the CPU – [0038]).**

Regarding claim 30, Odaohhara teaches wherein the line status information further includes battery capacity information that indicates a remaining battery capacity of the respective router device such that the calculated priorities are based on the line status information and the remaining battery capacity of the respective router device **(FIG. 5 shows a flowchart of the processes of a battery capacity information compensating program executed by the CPU – [0038]).**

Response to Arguments

Applicant's arguments filed on 08/19/2008 have been fully considered but they are not persuasive.

Applicant Arguments:

Shigehashi and Kuo do not disclose or suggest "notifying the plurality of router devices belonging to the common sub-network that the first router is operational," are required by claim 1.

Examiner Response:

With respect to Applicant arguments, It is the claims that define the claimed invention, and it is claims, not specifications that are anticipated or unpatentable. *Constant v. Advanced Micro-Devices Inc.*, 7 USPQ2d 1064.

Kuo discloses in Fig. 11 a block diagram presenting two VSRP devices acting as two virtual switches, each providing failover to different VLANs, according to one embodiment of the present invention. Kuo further discloses where each VSRP switch in master mode 1104 and 1106 broadcasts "here is same as *notifying*" hello packets 1122 and 1124 for each virtual switch in which the VSRP switch is a VSRP master. Other VSRP switches receive the hello packets 1122 and 1124 and act up on them if the receiving VSRP switch is a member of the virtual switch that the hello packet is destined for. Furthermore, Kuo discloses in Fig. 8, a flow diagram presenting a process that a VSRP device executes during operation in master confirm mode according to one embodiment of the present invention. In addition Kuo further discloses where the VSRP

switch in master confirm mode transmits the number of hello packets as defined by the hello counter variable, step 812, and no other device is broadcasting a higher priority value, step 820, the VSRP switch concludes it should be the VSRP master and transitions to master mode. Consistent with performance of the VSRP switch in master mode, the VSRP switch sets all its ports from blocking to forwarding, thereby allowing the regular flow of network traffic over its ports. The process executed by the VSRP switch in master mode is illustrated in FIG. 9. The process begins, step 900, when the device transitions into master mode, at which point the VSRP software initializes a countdown variable, step 902. The countdown variable is used as a timer to trigger the transmission of hello packets in the event the VSRP fails to receive hello packets from another device in the virtual switch. Therefore, Examiner maintains the rejection.

Applicant Arguments:

Kuo is also silent regarding "... requesting router status information of router devices belonging to a common sub-network ... deciding a first router device ... that is operational ...," as required by claim 1.

Examiner Response:

Kuo discloses a virtual switch is coupled to the loop free Layer 2 network, the virtual switch having two or more switches configured to transition between master and backup modes to provide redundant support for the loop free Layer 2 network, the switches communicating their status through use of a plurality of redundancy control

packets. The system also includes means for allowing the redundancy control packets to be flooded through the Layer 2 network. Kuo further discloses a hello packet is used by each VSRP backup switch to determine, based on the status of received hello packets in the same virtual switch, whether it should be in master mode (ports forwarding), blocking mode (ports blocking), or an intermediary "master confirm" mode (ports blocking to traffic but transmitting hello packets. Furthermore, Kuo discloses systems and methods are described for providing route redundancy to Layer 2 networks. The L2 network may have a plurality of switches arranged in an arbitrary configuration or architecture, but must remain loop free through the use, for example, of spanning tree or other protocol. Redundancy is provided through use of a virtual switch identified by an address and having two or more Layer 2 switches which communicate with one another to elect a master at any given time.

Shigehashi further discloses the router with the highest priority is automatically set as the active “here same as operational” router, while other routers are used as standby routers (backup routers) which is the same as “deciding a first router device ... that is operational”. Therefore, Examiner maintains the rejection.

Conclusion

Applicant's arguments filed on 08/19/2008 have been fully considered but they are not persuasive. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sulaiman Nooristany whose telephone number is (571) 270-1929. The examiner can normally be reached on M-F from 9 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Pwu, can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to

the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sulaiman Nooristany 10/30/2008

/Jeffrey Pwu/

Supervisory Patent Examiner, Art Unit 2446